

# SEQUENCE LISTING

<110> Welcher, Andrew  
Wen, Duanzhi  
Kelly, Michael

<120> Interferon-Like Molecules and Uses Thereof

<130> 99,372-A

<140>

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<150> 60/169,720

<151> 1999-12-08

<160> 39

<170> PatentIn Ver. 2.0

<210> 1

<211> 913

<212> DNA

<213> Rattus norvegicus

<220>

<221> CDS

<222> (53)..(625)

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<221> sig\_peptide

<222> (53)..(115)

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Met Thr  
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ctg aag tat tta tgg ctg gtg gcc ctc gtg gct cta tac att tca ccc 106  
Leu Lys Tyr Leu Trp Leu Val Ala Leu Val Ala Leu Tyr Ile Ser Pro  
5 10 15

atc cag tct cag aac tgt gtg tat ctg gat cat acc atc ttg gaa aac 154  
Ile Gln Ser Gln Asn Cys Val Tyr Leu Asp His Thr Ile Leu Glu Asn  
20 25 30

atg aaa ctt ctg agc agc atc agg acc acc ttt ccc tta aga tgt cta 202  
Met Lys Leu Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu  
35 40 45 50

aaa gat atc acg gat ttt gag ttt cct caa gag att ctg ctg tac gtc 250  
Lys Asp Ile Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val  
55 60 65

cag cat gtg aaa aag gac ata aag gca gtc acc tat cat ata tct tct 298  
Gln His Val Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser  
70 75 80

ctg gcg cta att att ttc agt ctt aaa gac tcc atc tcc ctg gcg aca 346  
 Leu Ala Leu Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr  
           85                                  90                                  95

gag gaa cgc ttg gaa cgt atc aga tcg gga ctt ttc aaa caa gtg cag 394  
 Glu Glu Arg Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln  
       100                                  105                                  110

caa gct cga gag tgc atg gta gac gag gag aac aag aac acg gag gag 442  
 Gln Ala Arg Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu  
       115                                  120                                  125                                  130

gac agt aca tca caa cat cct cac tca gag ggc ttc aag gca gtc tac 490  
 Asp Ser Thr Ser Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr  
                                   135                                  140                                  145

ctg gaa ttg aac aag tat ttc ttc aga atc aga aag ttc ctg gta aat 538  
 Leu Glu Leu Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn  
                                   150                                  155                                  160

aag aaa tac agt ttc tgt gcc tgg aag att gtc gtg gtg gaa ata aga 586  
 Lys Lys Tyr Ser Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg  
       165                                  170                                  175

aga tgt ttc agt ata ttt tac aaa cta ctc aac atg aat tgagaatcat 635  
 Arg Cys Phe Ser Ile Phe Tyr Lys Leu Leu Asn Met Asn  
       180                                  185                                  190

ccagcttcaa gcaagaactt agatagaagt tgtgactgct caaatgtccc caagaacgct 695

tgattctaag gctattgcga gtctgctgct acacacttcg gacgcaagac ttttcaagggt 755

caggggttcaa ggtagtacag tcaaaggaag tcttatgtta agcaaaagaa aaattttcagt 815

ggaaaagcta gcagaaatgt caacttgtca aaaaaacaac ttatggatta tggcattgac 875

gttactagca aaaaaaataa aacaaaaaaa aacaaaaa 913

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<212> PRT

<213> Rattus norvegicus

<400> 2

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                                   20                                  25                                  30

Glu Asn Met Lys Leu Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg  
       35                                  40                                  45

Cys Leu Lys Asp Ile Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu  
       50                                  55                                  60

Tyr Val Gln His Val Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile  
65 70 75 80

Ser Ser Leu Ala Leu Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu  
85 90 95

Ala Thr Glu Glu Arg Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln  
100 105 110

Val Gln Gln Ala Arg Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr  
115 120 125

Glu Glu Asp Ser Thr Ser Gln His Pro His Ser Glu Gly Phe Lys Ala  
130 135 140

Val Tyr Leu Glu Leu Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu  
145 150 155 160

Val Asn Lys Lys Tyr Ser Phe Cys Ala Trp Lys Ile Val Val Val Glu  
165 170 175

Ile Arg Arg Cys Phe Ser Ile Phe Tyr Lys Leu Leu Asn Met Asn  
180 185 190

<210> 3

<211> 168

<212> PRT

<213> Rattus norvegicus

<400> 3

Cys Val Tyr Leu Asp His Thr Ile Leu Glu Asn Met Lys Leu Leu Ser  
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20 25 30

Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val Gln His Val Lys Lys  
35 40 45

Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu Ile Ile  
50 55 60

Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg Leu Glu  
65 70 75 80

Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg Glu Cys  
85 90 95

Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr Ser Gln  
100 105 110

His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu Asn Lys  
115 120 125

Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr Ser Phe

130

135

140

Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Cys Phe Ser Ile  
 145 150 155 160

Phe Tyr Lys Leu Leu Asn Met Asn  
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&lt;210&gt; 4

&lt;211&gt; 1836

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (575)..(1195)

&lt;220&gt;

&lt;221&gt; sig\_peptide

&lt;222&gt; (575)..(655)

&lt;400&gt; 4

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 gctatagcac caggtacaaa aaatatattt tcatgaagga tcactccctc ttatgtaata 180  
 gatttgggtg agtgagtgtg tgagtgtgtg catggactca cagcttttgg ctttctgaaa 240  
 taccctgcat cagtcttgtt atgatgattc cttagtgtgt ggatggatca tccaggcatt 300  
 taaggtaaca cgatggtaat tctttgctca tttttcaggg aaaaaaaaaa gttatcactt 360  
 ccaaagtcgg catagtcacc cgaagtaaaa aaaaaaaaaa aaaaaaaaaa cctcagaggc 420  
 aaaggaaagg ggccgcaacc ttggttaact gtgaaatgac gaatgagaaa actcctcctg 480  
 ctgaagatat tcaggtatat aaaggcacat gaaggaaaac tcaaaacatc attgtcatat 540  
 acacatcttc tggatttttt agcttgcaaa aaaa atg agc acc aaa cct gat atg 595  
 Met Ser Thr Lys Pro Asp Met  
 1 5

att caa aag tgt ttg tgg ctt gag atc ctt atg ggt ata ttc att gct 643  
 Ile Gln Lys Cys Leu Trp Leu Glu Ile Leu Met Gly Ile Phe Ile Ala  
 10 15 20

ggc acc cta tcc ctg gac tgt aac tta ctg aac gtt cac ctg aga aga 691  
 Gly Thr Leu Ser Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg  
 25 30 35

gtc acc tgg caa aat ctg aga cat ctg agt agt atg agc aat tca ttt 739  
 Val Thr Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe  
 40 45 50 55

cct gta gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa gag 787  
Pro Val Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu  
60 65 70

ttt ctg caa tac acc caa cct atg aag agg gac atc aag aag gcc ttc 835  
Phe Leu Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe  
75 80 85

tat gaa atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc ttc 883  
Tyr Glu Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe  
90 95 100

aaa tat tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt gat 931  
Lys Tyr Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp  
105 110 115

cag caa gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat gaa 979  
Gln Gln Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu  
120 125 130 135

aat gaa gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca gaa 1027  
Asn Glu Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu  
140 145 150

gcc agg gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc cac 1075  
Ala Arg Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His  
155 160 165

agg ata gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc tgg 1123  
Arg Ile Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp  
170 175 180

gag att gtc cga gtg gaa atc aga aga tgt ttg tat tac ttt tac aaa 1171  
Glu Ile Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys  
185 190 195

ttt aca gct cta ttc agg agg aaa taaggatat ttttgaatt aaaattcctt 1225  
Phe Thr Ala Leu Phe Arg Arg Lys  
200 205

ttcctcoga aatctctttc tctttctcct cctccatctt ctttttaagg attgttgtgc 1285

tgtcctgtaa gctgtctc agttggactg gtagcctcgg aacatcaggg aactcacct 1345

ctctaaggag aggtaatgcc aaccatcctc agggtgacca agagtctcct tagaaagtct 1405

ttaagacatt tttaaaggaa taagattccc tctccgtctt cttctattct ctcttgctct 1465

tttctgtggc ctttttgaag gagctttgct atatatacca cctgtggact tcaccaagac 1525

aatggctaga ggataggag cagagaatgt tgcaaatgg taacatttca atgacttaac 1585

tgttttgctg ccaagggtgc ttatcctatg aaaattcagc acattaaaag agcttataca 1645

tgctccctag agtcaatact cttgcatttt cccctcctg ctggggggga aaaagggtga 1705

catttctggc ccatttcctt ctcagcttgg tttgtttgaa ttgatgcttg tggaatggta 1765

tttcattact ttaagagtga agatccatag tgaaattgga tggatggttg aattagacga 1825

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1836

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<212> PRT

<213> Homo sapiens

<400> 5

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20 25 30

Leu Asn Val His Leu Arg Arg Val Thr Trp Gln Asn Leu Arg His Leu  
35 40 45

Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys Leu Arg Glu Asn Ile  
50 55 60

Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr Thr Gln Pro Met Lys  
65 70 75 80

Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser Leu Gln Ala Phe Asn  
85 90 95

Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys Glu Arg His Leu Lys  
100 105 110

Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr Leu Asn Gln Cys  
115 120 125

Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met Lys Glu Met Lys Glu  
130 135 140

Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln Leu Ser Ser Leu  
145 150 155 160

Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe Leu Lys Glu Lys  
165 170 175

Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg Val Glu Ile Arg Arg  
180 185 190

Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu Phe Arg Arg Lys  
195 200 205

<210> 6

<211> 178

<212> PRT

<213> Homo sapiens

<400> 6

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20 25 30  
Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr Thr Gln  
35 40 45  
Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser Leu Gln  
50 55 60  
Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys Glu Arg  
65 70 75 80  
His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr Leu  
85 90 95  
Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met Lys Glu  
100 105 110  
Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln Leu  
115 120 125  
Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe Leu  
130 135 140  
Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg Val Glu  
145 150 155 160  
Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu Phe Arg  
165 170 175  
Arg Lys

<210> 7

<211> 187

<212> PRT

<213> Homo sapiens

<400> 7

Met Thr Asn Lys Cys Ile Leu Gln Ile Ala Leu Leu Leu Cys His Ser  
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20 25 30  
Ser Ser Asn Phe Gln Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg  
35 40 45  
Leu Glu Tyr Cys Leu Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu  
50 55 60  
Ile Lys Gln Leu Gln Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile

65	70	75	80
Tyr Glu Met Leu Gln Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser	85	90	95
Ser Thr Gly Trp Asn Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val	100	105	110
Tyr His Gln Ile Asn His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu	115	120	125
Lys Glu Asp Phe Thr Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys	130	135	140
Arg Tyr Tyr Gly Arg Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser	145	150	155
His Cys Ala Trp Thr Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr	165	170	175
Phe Ile Asn Lys Leu Thr Gly Tyr Leu Arg Asn	180	185	

<210> 8

<211> 520

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Rat IFN-like polypeptide cDNA insert and partial pAMG21 vector sequence

<220>

<221> CDS

<222> (4)..(510)

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ctg agc agc atc cgt acc acc ttt cct ctg cgt tgt ctg aaa gat atc	96
Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu Lys Asp Ile	
20 25 30	
acg gat ttt gag ttt cct caa gag att ctg ctg tac gtc cag cat gtg	144
Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val Gln His Val	
35 40 45	
aaa aag gac ata aag gca gtc acc tat cat ata tct tct ctg gcg cta	192
Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu	
50 55 60	
att att ttc agt ctt aaa gac tcc atc tcc ctg gcg aca gag gaa cgc	240
Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg	

65	70	75	
ttg gaa cgt atc aga tcg gga ctt ttc aaa caa gtg cag caa gct cga			288
Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg			
80	85	90	95
gag tgc atg gta gac gag gag aac aag aac acg gag gag gac agt aca			336
Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr			
100	105		110
tca caa cat cct cac tca gag ggc ttc aag gca gtc tac ctg gaa ttg			384
Ser Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu			
115	120		125
aac aag tat ttc ttc aga atc aga aag ttc ctg gta aat aag aaa tac			432
Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr			
130	135		140
agt ttc tgt gcc tgg aag att gtc gtg gtg gaa att cgt cgt tgt ttc			480
Ser Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Cys Phe			
145	150		155
agt att ttt tac aaa ctg ctg aac atg aat taatggatcc			520
Ser Ile Phe Tyr Lys Leu Leu Asn Met Asn			
160	165		

<210> 9

<211> 169

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Rat IFN-like polypeptide cDNA insert and partial pAMG21 vector sequence

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Met Cys Val Tyr Leu Asp His Thr Ile Leu Glu Asn Met Lys Leu Leu			
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Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu Lys Asp Ile Thr			
20	25		30
Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val Gln His Val Lys			
35	40		45
Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu Ile			
50	55		60
Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg Leu			
65	70	75	80
Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg Glu			
85	90		95
Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr Ser			

100	105	110
Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu Asn		
115	120	125
Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr Ser		
130	135	140
Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Cys Phe Ser		
145	150	155
		160
Ile Phe Tyr Lys Leu Leu Asn Met Asn		
165		

<210> 10  
 <211> 520  
 <212> DNA  
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<220>  
 <223> Description of Artificial Sequence: Rat IFN-like  
 polypeptide cDNA insert and partial pAMG21 vector  
 sequence

<220>  
 <221> CDS  
 <222> (4)..(510)

<400> 10  
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 Met Cys Val Tyr Leu Asp His Thr Ile Leu Glu Asn Met Lys Leu  
 1 5 10 15  
 ctg agc agc atc cgt acc acc ttt cct ctg cgt tgt ctg aaa gat atc 96  
 Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu Lys Asp Ile  
 20 25 30  
 acg gat ttt gag ttt cct caa gag att ctg ctg tac gtc cag cat gtg 144  
 Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Tyr Val Gln His Val  
 35 40 45  
 aaa aag gac atc aag gca gtc acc tat cat atc tct tct ctg gcg ctg 192  
 Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu  
 50 55 60  
 att att ttc agt ctt aaa gac tcc atc tcc ctg gcg aca gag gaa cgc 240  
 Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg  
 65 70 75  
 ttg gaa cgt atc cgt tct ggt ctt ttc aaa caa gtg cag caa gct cgt 288  
 Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg  
 80 85 90 95  
 gag tgc atg gta gac gag gag aac aag aac acg gag gag gac agt aca 336  
 Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr  
 100 105 110

tca caa cat cct cac tca gag ggc ttc aag gca gtc tac ctg gaa ttg 384  
 Ser Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu  
 115 120 125

aac aag tat ttc ttc cgt atc cgt aag ttc ctg gta aat aag aaa tac 432  
 Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr  
 130 135 140

agt ttc tgt gcc tgg aag att gtc gtg gtg gaa att cgt cgt tct ttc 480  
 Ser Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Ser Phe  
 145 150 155

agt att ttt tac aaa ctg ctg aac atg aat taatggatcc 520  
 Ser Ile Phe Tyr Lys Leu Leu Asn Met Asn  
 160 165

<210> 11

<211> 169

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Rat IFN-like  
 polypeptide cDNA insert and partial pAMG21 vector  
 sequence

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Met Cys Val Tyr Leu Asp His Thr Ile Leu Glu Asn Met Lys Leu Leu  
 1 5 10 15

Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu Lys Asp Ile Thr  
 20 25 30

Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val Gln His Val Lys  
 35 40 45

Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu Ile  
 50 55 60

Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg Leu  
 65 70 75 80

Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg Glu  
 85 90 95

Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr Ser  
 100 105 110

Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu Asn  
 115 120 125

Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr Ser  
 130 135 140

Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Ser Phe Ser

145 150 155 160

Ile Phe Tyr Lys Leu Leu Asn Met Asn  
165

<210> 12  
<211> 568  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Human IFN-like  
polypeptide cDNA insert and partial pAMG21 vector  
sequence

<220>  
<221> CDS  
<222> (22)..(558)

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Met Cys Asn Leu Leu Asn Val His Leu Arg  
1 5 10  
cgt gtt acc tgg caa aat ctg aga cat ctg agt agt atg agc aat tca 99  
Arg Val Thr Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser  
15 20 25  
ttt cct gta gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa 147  
Phe Pro Val Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln  
30 35 40  
gag ttt ctg caa tac acc caa cct atg aag agg gac atc aag aag gcc 195  
Glu Phe Leu Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala  
45 50 55  
ttc tat gaa atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc 243  
Phe Tyr Glu Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr  
60 65 70  
ttc aaa tat tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt 291  
Phe Lys Tyr Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu  
75 80 85 90  
gat cag caa gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat 339  
Asp Gln Gln Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn  
95 100 105  
gaa aat gaa gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca 387  
Glu Asn Glu Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser  
110 115 120  
gaa gcc agg gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc 435  
Glu Ala Arg Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe  
125 130 135

cac agg ata gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc 483  
 His Arg Ile Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala  
 140 145 150

tgg gag att gtc cga gtg gaa atc cgt cgt tgc ctg tac tac ttt tac 531  
 Trp Glu Ile Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr  
 155 160 165 170

aaa ttt acc gct ctg ttc cgt cgt aaa taatggatcc 568  
 Lys Phe Thr Ala Leu Phe Arg Arg Lys  
 175

<210> 13

<211> 179

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Rat IFN-like  
 polypeptide cDNA insert and partial pAMG21 vector  
 sequence

<400> 13

Met Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln Asn  
 1 5 10 15

Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys Leu  
 20 25 30

Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr Thr  
 35 40 45

Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser Leu  
 50 55 60

Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys Glu  
 65 70 75 80

Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr  
 85 90 95

Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met Lys  
 100 105 110

Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln  
 115 120 125

Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe  
 130 135 140

Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg Val  
 145 150 155 160

Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu Phe  
 165 170 175

Arg Arg Lys

<210> 14

<211> 568

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Human IFN-like polypeptide cDNA insert and partial pAMG21 vector sequence

<220>

<221> CDS

<222> (22)..(558)

<400> 14

tctagaaagg aggaataaca t atg tgt aac ctg ctg aac gtt cac ctg cgt	51
Met Cys Asn Leu Leu Asn Val His Leu Arg	
1 5 10	
cgt gtt acc tgg caa aat ctg aga cat ctg agt agt atg agc aat tca	99
Arg Val Thr Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser	
15 20 25	
ttt cct gta gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa	147
Phe Pro Val Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln	
30 35 40	
gag ttc ctg caa tac acc caa cct atg aag agg gac atc aag aag gcc	195
Glu Phe Leu Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala	
45 50 55	
ttc tat gaa atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc	243
Phe Tyr Glu Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr	
60 65 70	
ttc aaa tat tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt	291
Phe Lys Tyr Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu	
75 80 85 90	
gat cag caa gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat	339
Asp Gln Gln Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn	
95 100 105	
gaa aat gaa gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca	387
Glu Asn Glu Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser	
110 115 120	
gaa gcc agg gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc	435
Glu Ala Arg Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe	
125 130 135	
cac agg ata gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc	483
His Arg Ile Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala	

140

145

150

tgg gag att gtc cga gtg gaa atc cgt cgt tct ctg tac tac ttt tac 531  
 Trp Glu Ile Val Arg Val Glu Ile Arg Arg Ser Leu Tyr Tyr Phe Tyr  
 155 160 165 170

aaa ttt acc gct ctg ttc cgt cgt aaa taatggatcc 568  
 Lys Phe Thr Ala Leu Phe Arg Arg Lys  
 175

&lt;210&gt; 15

&lt;211&gt; 179

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Human IFN-like  
 polypeptide cDNA insert and partial pAMG21 vector  
 sequence

&lt;400&gt; 15

Met Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln Asn  
 1 5 10 15

Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys Leu  
 20 25 30

Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr Thr  
 35 40 45

Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser Leu  
 50 55 60

Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys Glu  
 65 70 75 80

Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr  
 85 90 95

Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met Lys  
 100 105 110

Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln  
 115 120 125

Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe  
 130 135 140

Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg Val  
 145 150 155 160

Glu Ile Arg Arg Ser Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu Phe  
 165 170 175

Arg Arg Lys

<210> 16  
 <211> 556  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Human IFN-like  
 polypeptide cDNA insert and partial pAMG21 vector  
 sequence

<220>  
 <221> CDS  
 <222> (1)..(546)

<400> 16  
 cat atg ctg gac tgt aac ctg ctg aac gtt cac ctg cgt cgt gtt acc 48  
 His Met Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr  
 1 5 10 15  
 tgg caa aat ctg aga cat ctg agt agt atg agc aat tca ttt cct gta 96  
 Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val  
 20 25 30  
 gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa gag ttt ctg 144  
 Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu  
 35 40 45  
 caa tac acc caa cct atg aag agg gac atc aag aag gcc ttc tat gaa 192  
 Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu  
 50 55 60  
 atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc ttc aaa tat 240  
 Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr  
 65 70 75 80  
 tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt gat cag caa 288  
 Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln  
 85 90 95  
 gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat gaa aat gaa 336  
 Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu  
 100 105 110  
 gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca gaa gcc agg 384  
 Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg  
 115 120 125  
 gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc cac agg ata 432  
 Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile  
 130 135 140  
 gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc tgg gag att 480  
 Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile  
 145 150 155 160

gtc cga gtg gaa atc cgt cgt tgc ctg tac tac ttt tac aaa ttt acc 528  
 Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr  
                   165                  170                  175

gct ctg ttc cgt cgt aaa taatggatcc 556  
 Ala Leu Phe Arg Arg Lys  
                   180

<210> 17  
 <211> 182  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Human IFN-like  
           polypeptide cDNA insert and partial pAMG21 vector  
           sequence

<400> 17  
 His Met Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr  
   1                  5                  10                  15  
 Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val  
                   20                  25                  30  
 Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu  
           35                  40                  45  
 Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu  
   50                  55                  60  
 Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr  
   65                  70                  75                  80  
 Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln  
                   85                  90                  95  
 Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu  
           100                  105                  110  
 Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg  
           115                  120                  125  
 Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile  
           130                  135                  140  
 Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile  
   145                  150                  155                  160  
 Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr  
           165                  170                  175  
 Ala Leu Phe Arg Arg Lys  
                   180

<210> 18  
 <211> 11  
 <212> PRT  
 <213> Human immunodeficiency virus type 1

<400> 18  
 Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg  
 1 5 10

<210> 19  
 <211> 15  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Internalizing  
 domain derived from HIV tat protein

<400> 19  
 Gly Gly Gly Gly Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg  
 1 5 10 15

<210> 20  
 <211> 21  
 <212> DNA  
 <213> Rattus norvegicus

<400> 20  
 atgacactga agtatttatg g 21

<210> 21  
 <211> 21  
 <212> DNA  
 <213> Rattus norvegicus

<400> 21  
 attcatgttg agtagtttgt a 21

<210> 22  
 <211> 48  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: PCR primer  
 1825-22

<400> 22  
 gaataacata tgtgtgtata tctcgatcat actatcttgg agaatatg 48

<210> 23  
 <211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer  
1825-21

<400> 23

ccgcggatcc attaatcat gttcagcagt ttgtaaaaa tactgaaaca acgacgaatt 60

tcc

63

<210> 24

<211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer  
1909-56

<400> 24

ccgcggatcc attaatcat gttcagcagt ttgtaaaaa tactgaaaga acgacgaatt 60

tcc

63

<210> 25

<211> 67

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer  
1967-32

<400> 25

ttgatctaga aaggaggaat aacatatgtg taacctgctg aacgttcacc tgcgtcgtgt 60

tacctgg

67

<210> 26

<211> 71

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer  
1982-14

<400> 26

ccgcggatcc attatctacg acggaacaga gcggtaaatt tgtaaaagta gtacaggcaa 60

cgacgatttc c

71

<210> 27  
<211> 72  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR primer  
1967-33

<400> 27  
ccgcggatcc attattttacg acggaacaga gcggtaaatt tgtaaaagta gtacagagaa 60  
cgacggattt cc 72

<210> 28  
<211> 39  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR primer  
2103-87

<400> 28  
aaggagcata tgctggactg taacctgctg aacgttcac 39

<210> 29  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR primer  
1200-54

<400> 29  
gttattgctc agcgggtggca 20

<210> 30  
<211> 32  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR primer  
1847-77

<400> 30  
cccaagctta ccatgacact gaagtattta tg 32

<210> 31  
<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer  
1847-78

<400> 31

aaggaaaaaa gcggccgcat tcatgttgag tag

33

<210> 32

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer  
1896-56

<400> 32

acgcgtcgac tcatcaattc atgttgagta gtttg

35

<210> 33

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer  
1896-57

<400> 33

aaggaaaaaa gcggccgctc atcaattcat gttgagtag

39

<210> 34

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer  
1954-45

<400> 34

acgcgtcgac ttattatttc ctctgaata g

31

<210> 35

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

1954-46

<400> 35  
aaggaaaaaa gcggccgctt attatttcct cctgaataga gc 42

<210> 36  
<211> 33  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR primer  
1955-44

<400> 36  
cccaagctta ccatgagcac caaacctgat atg 33

<210> 37  
<211> 34  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR primer  
1954-47

<400> 37  
cccaagctta ccatgattca aaagtgtttg tggc 34

<210> 38  
<211> 53  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR primer  
1954-48

<400> 38  
aaggaaaaaa gcggccgcgc gccctcgat tttcctcctg aatagagctg taa 53

<210> 39  
<211> 41  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR primer  
1954-49

<400> 39  
aaggaaaaaa gcggccgctt tcctcctgaa tagagctgta a 41